Index to Volume 11, 1990

Author/Title Index

Agrawal, A. K. and Sengupta, S.: Laminar flow and heat transfer in a finned tube annulus, 54
Aihara, T. *See* Maruyama, S.
Astill, K. N. *See* Molki, M.
Aston, J. G. L. *See* Barclay, W. H.

Barclay, W. H. and Aston, J. G. L.: Influence of vent positions on smoke clearance from a room, 362
Bejan, A., Zhang, Z. and Jany, P.: The horizontal intrusion layer of melt in a saturated porous medium, 284
Bejan, A. *See* Lage, J. L.
Boysan, F. *See* Weber, R.

Calvert, J. R.: Pressure drop for foam flow through pipes, 236
Campo, A.: Development of the thermal boundary layer at the inlet of a circular pipe and comparison with Lévêque solution, 60
Campo, A. *See* Salazar, A. J.
Campo, A. *See* Schuler, C.
Chan, W. K.: Correlation between cavitation type and cavitation erosion in centrifugal pumps, 269
Char, M. I., Chen, C. K. and Cleaver, J. W: Conjugate forced convection heat transfer from a continuous, moving flat sheet, 257
Chen, C. H. *See* Chen, C. K.
Chen, C. K. and Chen, C. H.: Nonuniform porosity and non-Darcian effects on conjugate mixed convection heat transfer from a plate fin in porous media, 65
Chen, C. K. *See* Char, M. I.
Chen, M. S. and Jones, B. W.: Condensation by heterogeneous nucleation in a thermal boundary layer, 290
Chiu, C. P. and Wu, T. S.: Numerical study of turbulent in-cylinder flow during motoring utilizing a general curvilinear coordinate system, 303
Chiu, P. C. and Fung, E. H. K.: Flow-forced dynamics of a triple heat exchanger—Part I: Formulation of mathematical model, 10
Flow-forced dynamics of a triple heat exchanger—Part II: Experimentation and results, 17
Cho, H. W. and Hyun, J. M.: Numerical solutions of pulsating flow and heat transfer characteristics in a pipe, 321
Choi, B. S. *See* Hyun, J. M.
Cleaver, J. W. *See* Char, M. I.
Crane, R. I. *See* Leoutsakos, G.

Daniels, P. G.: Minimum heat transfer by laminar natural convection across a laterally heated vertical slot, 371
Date, A. W. and Saha, S. K.: Numerical prediction of laminar flow and heat transfer characteristics in a tube fitted with regularly spaced twisted-tape elements, 346

Ebinuma, C. D. *See* Nakayuma, A.
El-Dujaily, M. J. and Mobbs, F. R.: The effect of end walls on subcritical flow between concentric and eccentric rotating cylinders, 72

Fox, T. A.: Flow visualization at the center of a cross composed of tubes, 160
Fung, E. H. K. *See* Chiu, P. C.

Ghorashi, G. *See* Wangskarn, P.
Gorla, R. S. R. *See* Wangskarn, P.
Guezennec, Y. G. *See* Trigui, N.

Haynes, B. D. *See* Parang, M.
Ho, C. J. and Lin, Y. H.: On simulation of transient thermal convection of two-fluid layers in a horizontal circular enclosure, 355
Huang, C. H. and Özişik, M. N.: A direct integration approach for simultaneously estimating spatially varying thermal conductivity and heat capacity, 262
Humphrey, J. A. C.: Fundamentals of fluid motion in erosion by solid particle impact (Review), 170
Hyun, J. M. and Choi, B. S.: Transient natural convection in a parallelogram-shaped enclosure, 129
Hyun, J. M. *See* Cho, H. W.

Jany, P. *See* Bejan, A.
Jones, B. W. *See* Chen, M. S.

Kazmierczak, M. and Poulikakos, D.: Transient double diffusion in a stably stratified fluid layer heated from below, 30
Kim, S. J. *See* Vafai, K.
Kim, S. S. *See* Yoa, S. J.
Kim, W. S. and Özişik, M. N.: Conjugated laminar forced convection in ducts with periodic variation of inlet temperature, 311

Lage, J. L. and Bejan, A.: Numerical study of forced convection near a surface covered with hair, 242
Leal, E. *See* Molki, M.
Lee, J. S. *See* Yoa, S. J.
Leoutsakos, G. and Crane, R. I.: Three-dimensional boundary layer transition on a concave surface, 2
Ligrani, P. M. and Schwartz, G. E.: Control of embedded longitudinal vortices using a wall jet, 274
Lin, Y. H. *See* Ho, C. J.
Liu, C. Y. *See* Tan, J. O.
Low, H. G. *See* Tso, C. P.
Lupo, M. *See* Pozzi, A.

Maruyama, S., Viskanta, R. and Aihara, T.: Analysis of an active high-temperature thermal insulation system, 196
McDonell, V. G. *See* Mostafa, A. A.
Mobbs, F. R. *See* El-Dujaily, M. J.
Mohamed, O. E. E. *See* Neti, S.
Mongia, H. C. *See* Mostafa, A. A.

Molki, M., Astill, K. N. and Leal, A.: Convective heat-mass transfer in the entrance region of a concentric annulus having a rotating inner cylinder, 120
Mortazavi, S. S. *See* Rostami, A. A.
Mostafa, A. A., Mongia, H. C., McDonell, V. G. and Samuelson, G. S.: An experimental and numerical study of particle-laden coaxial jet flows, 90

Nakayuma, A. and Ebinuma, C. D.: Transient non-Darcy forced convective heat transfer from a flat plate embedded in a fluid-saturated porous medium, 249
Nelson, D. A., Ohadi, M. M., Zia, S. and Whipple, R. L.: Electrostatic effects on pressure drop in tube flows, 298
Neti, S. and Mohamed, O. E. E.: Numerical simulation of turbulent two-phase flows, 204
Ng, S. M. *See* Tso, C. P.

Ohadi, M. M. *See* Nelson, D. A.
Özişik, M. N. *See* Huang, C. H.
Özişik, M. N. *See* Kim, W. S.

Parang, M., Crocker, D. S. and Haynes, B. D.: Perturbation solution for spherical and cylindrical solidification by combined and convective and radiative cooling, 142
Poškas, P. *See* Vilemas, J.
Poulikakos, D. *See* Kazmierczak, M.
Poulikakos, D. *See* Wietrzak, A.
Pozzi, A. and Lupo, M.: Variable-property effects in free convection, 135

Quinn, W. R.: Mean flow and turbulence measurements in a triangular turbulent free jet, 220

Rajab, I. and Winterton, R. H. S.: The two transition boiling curves and solid–liquid contact on a horizontal surface, 149
Rostami, A. A. and Mortazavi, S. S.: Analytical prediction of Nusselt number in a simultaneously developing laminar flow between parallel plates, 44

Saha, S. K. *See* Date, A. W.
Salazar, A. J. and Campo, A.: Prediction of the thermal entry length without solving the complete entrance length problem, 48
Samuelson, G. S. *See* Mostafa, A. A.
Schuler, C. and Campo, A.: A calculation procedure for momentum and heat transfer in the turbulent boundary layer of gases using the methods of lines and control volumes (MOLCV), 79
Schwartz, G. E. *See* Ligrani, P. M.
Sengupta, S. *See* Agrawal, A. K.

Tan, J. O. and Liu, C. Y.: Predicting the performance of a heat-pipe heat exchanger, using the effectiveness–NTU method, 376

Index to Volume 11, 1990

Author/Title Index

Agrawal, A. K. and Sengupta, S.: Laminar flow and heat transfer in a finned tube annulus, 54
Aihara, T. *See* Maruyama, S.
Astill, K. N. *See* Molki, M.
Aston, J. G. L. *See* Barclay, W. H.

Barclay, W. H. and Aston, J. G. L.: Influence of vent positions on smoke clearance from a room, 362
Bejan, A., Zhang, Z. and Jany, P.: The horizontal intrusion layer of melt in a saturated porous medium, 284
Bejan, A. *See* Lage, J. L.
Boysan, F. *See* Weber, R.

Calvert, J. R.: Pressure drop for foam flow through pipes, 236
Campo, A.: Development of the thermal boundary layer at the inlet of a circular pipe and comparison with Lévêque solution, 60
Campo, A. *See* Salazar, A. J.
Campo, A. *See* Schuler, C.
Chan, W. K.: Correlation between cavitation type and cavitation erosion in centrifugal pumps, 269
Char, M. I., Chen, C. K. and Cleaver, J. W: Conjugate forced convection heat transfer from a continuous, moving flat sheet, 257
Chen, C. H. *See* Chen, C. K.
Chen, C. K. and Chen, C. H.: Nonuniform porosity and non-Darcian effects on conjugate mixed convection heat transfer from a plate fin in porous media, 65
Chen, C. K. *See* Char, M. I.
Chen, M. S. and Jones, B. W.: Condensation by heterogeneous nucleation in a thermal boundary layer, 290
Chiu, C. P. and Wu, T. S.: Numerical study of turbulent in-cylinder flow during motoring utilizing a general curvilinear coordinate system, 303
Chiu, P. C. and Fung, E. H. K.: Flow-forced dynamics of a triple heat exchanger—Part I: Formulation of mathematical model, 10
Flow-forced dynamics of a triple heat exchanger—Part II: Experimentation and results, 17
Cho, H. W. and Hyun, J. M.: Numerical solutions of pulsating flow and heat transfer characteristics in a pipe, 321
Choi, B. S. *See* Hyun, J. M.
Cleaver, J. W. *See* Char, M. I.
Crane, R. I. *See* Leoutsakos, G.

Daniels, P. G.: Minimum heat transfer by laminar natural convection across a laterally heated vertical slot, 371
Date, A. W. and Saha, S. K.: Numerical prediction of laminar flow and heat transfer characteristics in a tube fitted with regularly spaced twisted-tape elements, 346

Ebinuma, C. D. *See* Nakayuma, A.
El-Dujaily, M. J. and Mobbs, F. R.: The effect of end walls on subcritical flow between concentric and eccentric rotating cylinders, 72

Fox, T. A.: Flow visualization at the center of a cross composed of tubes, 160
Fung, E. H. K. *See* Chiu, P. C.

Ghorashi, G. *See* Wangskarn, P.
Gorla, R. S. R. *See* Wangskarn, P.
Guezennec, Y. G. *See* Trigui, N.

Haynes, B. D. *See* Parang, M.
Ho, C. J. and Lin, Y. H.: On simulation of transient thermal convection of two-fluid layers in a horizontal circular enclosure, 355
Huang, C. H. and Özişik, M. N.: A direct integration approach for simultaneously estimating spatially varying thermal conductivity and heat capacity, 262
Humphrey, J. A. C.: Fundamentals of fluid motion in erosion by solid particle impact (Review), 170
Hyun, J. M. and Choi, B. S.: Transient natural convection in a parallelogram-shaped enclosure, 129
Hyun, J. M. *See* Cho, H. W.

Jany, P. *See* Bejan, A.
Jones, B. W. *See* Chen, M. S.

Kazmierczak, M. and Poulikakos, D.: Transient double diffusion in a stably stratified fluid layer heated from below, 30
Kim, S. J. *See* Vafai, K.
Kim, S. S. *See* Yoa, S. J.
Kim, W. S. and Özişik, M. N.: Conjugated laminar forced convection in ducts with periodic variation of inlet temperature, 311

Lage, J. L. and Bejan, A.: Numerical study of forced convection near a surface covered with hair, 242
Leal, E. *See* Molki, M.
Lee, J. S. *See* Yoa, S. J.
Leoutsakos, G. and Crane, R. I.: Three-dimensional boundary layer transition on a concave surface, 2
Ligrani, P. M. and Schwartz, G. E.: Control of embedded longitudinal vortices using a wall jet, 274
Lin, Y. H. *See* Ho, C. J.
Liu, C. Y. *See* Tan, J. O.
Low, H. G. *See* Tso, C. P.
Lupo, M. *See* Pozzi, A.

Maruyama, S., Viskanta, R. and Aihara, T.: Analysis of an active high-temperature thermal insulation system, 196
McDonell, V. G. *See* Mostafa, A. A.
Mobbs, F. R. *See* El-Dujaily, M. J.
Mohamed, O. E. E. *See* Neti, S.
Mongia, H. C. *See* Mostafa, A. A.

Molki, M., Astill, K. N. and Leal, A.: Convective heat-mass transfer in the entrance region of a concentric annulus having a rotating inner cylinder, 120
Mortazavi, S. S. *See* Rostami, A. A.
Mostafa, A. A., Mongia, H. C., McDonell, V. G. and Samuelson, G. S.: An experimental and numerical study of particle-laden coaxial jet flows, 90

Nakayuma, A. and Ebinuma, C. D.: Transient non-Darcy forced convective heat transfer from a flat plate embedded in a fluid-saturated porous medium, 249
Nelson, D. A., Ohadi, M. M., Zia, S. and Whipple, R. L.: Electrostatic effects on pressure drop in tube flows, 298
Neti, S. and Mohamed, O. E. E.: Numerical simulation of turbulent two-phase flows, 204
Ng, S. M. *See* Tso, C. P.

Ohadi, M. M. *See* Nelson, D. A.
Özişik, M. N. *See* Huang, C. H.
Özişik, M. N. *See* Kim, W. S.

Parang, M., Crocker, D. S. and Haynes, B. D.: Perturbation solution for spherical and cylindrical solidification by combined and convective and radiative cooling, 142
Poškas, P. *See* Vilemas, J.
Poulikakos, D. *See* Kazmierczak, M.
Poulikakos, D. *See* Wietrzak, A.
Pozzi, A. and Lupo, M.: Variable-property effects in free convection, 135

Quinn, W. R.: Mean flow and turbulence measurements in a triangular turbulent free jet, 220

Rajab, I. and Winterton, R. H. S.: The two transition boiling curves and solid–liquid contact on a horizontal surface, 149
Rostami, A. A. and Mortazavi, S. S.: Analytical prediction of Nusselt number in a simultaneously developing laminar flow between parallel plates, 44

Saha, S. K. *See* Date, A. W.
Salazar, A. J. and Campo, A.: Prediction of the thermal entry length without solving the complete entrance length problem, 48
Samuelson, G. S. *See* Mostafa, A. A.
Schuler, C. and Campo, A.: A calculation procedure for momentum and heat transfer in the turbulent boundary layer of gases using the methods of lines and control volumes (MOLCV), 79
Schwartz, G. E. *See* Ligrani, P. M.
Sengupta, S. *See* Agrawal, A. K.

Tan, J. O. and Liu, C. Y.: Predicting the performance of a heat-pipe heat exchanger, using the effectiveness–NTU method, 376

Tarada, F.: Prediction of rough-wall boundary layers using a low Reynolds number k-ε model, 331
Trigui, N. and Guezennec, Y. G.: Heat transfer reduction in manipulated turbulent boundary layers, 214
Tso, C. P., Low, H. G. and Ng, S. M.: Pool film boiling from spheres to saturated and subcooled liquids of Freon-12 and Freon-22, 154

Ušpuras, E. *See* Vilemas, J.

Vafai, K. and Kim, S. J.: Fluid mechanics of the interface region between a porous medium and a fluid layer—an exact solution, 254
Vilemas, J., Ušpuras, E. and Poškas, P.: Investigation of heat transfer Prandtl number dependence by $\overline{u't'}$ and $\overline{v't'}$ solutions, 23
Viskanta, R. *See* Maruyama, S.
Visser, B. M. *See* Weber, R.

Wangskarn, P., Ghorashi, G. and Gorla, R. S. R.: A numerical solution for the turbulent flow of non-Newtonian fluids in the entrance region of a heated circular tube, 40
Weber, R., Visser, B. M. and Boysan, F.: Assessment of turbulence modeling for engineering prediction of swirling vortices in the near burner zone, 225
Wietrzak, A. and Poulikakos, D.: Turbulent forced convective cooling of microelectronic devices, 105
Whipple, R. L. *See* Nelson, D. A.
Winterton, R. H. S. *See* Rajab, I.
Wu, T. S. *See* Chiu, C. P.

Xie, D. G.: Torsion effect on secondary flow in a helical pipe, 114

Yoa, S. J., Kim, S. S. and Lee, J. S.: Thermophoresis of highly absorbing, emitting particles in laminar tube flow, 98

Zhang, Z. *See* Bejan, A.
Zia, S. *See* Nelson, D. A.

Keyword Index

Algebraic grid generation technique, 303
Annular flow, 120
Annulus and effects, 72
Anomalous circulation, 72
Asymptotic solutions, 249
Augmentation and enhancement, 54

Boiling in Freon-12 and Freon-22, 154
Boiling over spheres, 154
Boundary layer(s), 2, 290, 331

Cavitation, 269
Cavity wall insulation, 371
Circular tube, 346
Clearance air jet, 362
Coaxial jet, 90
Collisions, 170
Complex eigenvalue, 311
Compressibility, 236
Condensation, 290
Conjugate, 257
Conjugate mixed convection, 65
Conjugated laminar forced convection, 311
Control-volume discretization, 79
Convective heat-mass transfer, 120
Convective heat transfer, 23, 48
Cooling of electronic equipment, 105
Cross composed of tubes, 160
Cubic spline collocation method, 257
Cumulative collection efficiency, 98
Curved pipe flows, 114

Deformed boundary, 303
Developing flow and heat transfer, 120
Developing region, 40, 321
Disk fin, 60
Dissipation, 23
Double diffusion, 30
Drag reduction, 214
Duct flows, 48
Dynamic model, 10, 17

Eccentric cylinders, 72
Electrohydrodynamics, 298
Electrostatic pressure, 298
Enclosure flows, 355
Entrance region, 40
Erosion, 170, 269
Exact solution, 254

Fibers on a surface, 242
Film boiling, 154
Finned surfaces, 54
Flow, 170
Flow separation, 54
Flow visualization, 160
Fluid dynamics, 225
Fluid flow, 254
Foam, 236
Forced convection, 249, 257, 346
Friction, 236

Gas injection, 196
Gortler vortices, 2

Hair, 242
Heat exchangers, 10, 17, 376
Heat pipe, 376
Heat transfer, 142, 321, 371
Heat transfer reduction, 214
Heterogeneous nucleation, 290
High temperature, 196

In-cylinder air motion, 303
Injectant, 274
Insulation, 196
Interface, 254
Inverse conduction, 262
Inverse heat conduction, 149

Jet flow, 204

K–ε model, 204

Laminar flow, 346
Large-eddy breakup devices, 214
Lévêque problem, 60
Longitudinal curvature, 2
Longitudinal vortex, 274

Measurements, 90
Melting, 284
Method of lines, 60, 79
Modeling, 90

Natural convection, 135, 284, 371
Net positive suction head (NPSH), 269
Non-Darcy flow, 249
Non-Newtonian fluids, 40
NTU method, 376
Numerical analysis, 23
Numerical simulation(s), 30, 204

Parallelogram-shaped cavity, 129
Particles, 170
Perturbation method(s), 114, 142
Pipe flow, 23, 204, 236
Pool boiling, 149
Porous media, 65, 242, 249, 254, 284
Power-law fluids, 40
Prandtl number, 23
Pressure drop, 236
Production, 23
Property determination, 262
Pulsating flow in a pipe, 321

Radiative-convective cooling, 142
Reynolds analogy, 214
Rotating annular flow, 120
Roughness, 331

Secondary flows, 114
Sentfleben effect, 298
Sharp-edged slot, 220
Skin friction, 321
Smoke clearance, 362
Solidification, 142
Solid–liquid contact, 149
Steady state, 149
Subcritical vortices, 72
Sublimation techniques for heat transfer, 120
Swirling confined flows, 225

Taylor vortex flow, 120
Taylor vortices, 72
Thermal diode, 129
Thermal entry length, 48
Thermophoresis, 98
Transient, 30, 149
Transient conduction, 262
Transient duct flow, 311
Transient natural convection, 129
Transient solution, 249
Transient thermal convection, 355
Transition, 2
Transition boiling, 149
Triangular jet, 220
Turbulence, 23, 90, 204, 220
Turbulence control, 214
Turbulence modeling, 225, 331
Turbulent, 170
Turbulent boundary layer(s), 79, 214, 274
Turbulent convection, 105
Turbulent heat flux, 23
Twisted-tape elements, 346
Two-fluid layers, 355
Two-fluid model, 98
Two-phase, 90, 204
Two-phase layer flow, 154

Unsteady turbulent flow, 303

Variable-property effects, 135
Vent positions, 362
Vortex control, 274

Wake, 160
Wall jet, 274
Weighted residuals, 10, 17
Wettability, 149